SEQUENCE LISTING

<110> DENEFLE, Patrice
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      PRADES, Catherine
      ARNOULD-REGUIGNE, Isabelle
      DUVERGER, Nicolas
      ALLIKMETS, Rando
      DEAN, Michael

<120> NUCLEIC ACIDS OF THE HUMAN ABCA5, ABCA6, ABCA9, AND ABCA10 GENES, VECTORS
CONTAINING SUCH NUCLEIC ACIDS, AND USES THEREOF

<130> ABCA5, 6, 9, 10

<140> US 10/005,338

<141> 2001-12-07

<150> US 60/263,231
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<170> PatentIn Ver. 2.1

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Glu Leu Asn Pro Met Asp Lys Phe Thr Leu Ser Asn Leu Ile Leu Gly
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Tyr Thr Pro Val Thr Asn Ile Thr Ser Ser Ile Met Gln Lys Val Ser
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Thr Asp His Leu Pro Asp Val Ile Ile Thr Glu Glu Tyr Thr Asn Glu
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Lys Glu Met Leu Thr Ser Ser Leu Ser Lys Pro Ser Asn Phe Val Gly
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Asp Glu Met Glu Gln Ser Leu Leu Ile Leu Ser Glu Thr Lys Ala Ser
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Leu Val Ser Thr Met Ser Leu Trp Lys Gln Gln Met Tyr Thr Ile Ala
    835   840   845

Lys Phe His Phe Phe Thr Leu Lys Arg Glu Ser Lys Ser Val Arg Ser
    850   855   860

Val Leu Leu Leu Leu Leu Ile Phe Phe Thr Val Gln Ile Phe Met Phe
865   870   875   880

Leu Val His His Ser Phe Lys Asn Ala Val Val Pro Ile Lys Leu Val
                885   890   895

Pro Asp Leu Tyr Phe Leu Lys Pro Gly Asp Lys Pro His Lys Tyr Lys
            900   905   910

Thr Ser Leu Leu Leu Gln Asn Ser Ala Asp Ser Asp Ile Ser Asp Leu
        915   920   925

Ile Ser Phe Phe Thr Ser Gln Asn Ile Met Val Thr Met Ile Asn Asp
    930   935   940

Ser Asp Tyr Val Ser Val Ala Pro His Ser Ala Ala Leu Asn Val Met
945   950   955   960

His Ser Glu Lys Asp Tyr Val Phe Ala Ala Val Phe Asn Ser Thr Met
                965   970   975

Val Tyr Ser Leu Pro Ile Leu Val Asn Ile Ile Ser Asn Tyr Tyr Leu
            980   985   990

Tyr His Leu Asn Val Thr Glu Thr Ile Gln Ile Trp Ser Thr Pro Phe
        995   1000   1005

Phe Gln Glu Ile Thr Asp Ile Val Phe Lys Ile Glu Leu Tyr Phe Gln
    1010   1015   1020

Ala Ala Leu Leu Gly Ile Ile Val Thr Ala Met Pro Pro Tyr Phe Ala
1025   1030   1035   1040

Met Glu Asn Ala Glu Asn His Lys Ile Lys Ala Tyr Thr Gln Leu Lys
            1045   1050   1055

Leu Ser Gly Leu Leu Pro Ser Ala Tyr Trp Ile Gly Gln Ala Val Val
        1060   1065   1070

Asp Ile Pro Leu Phe Phe Ile Ile Leu Ile Leu Met Leu Gly Ser Leu
        1075   1080   1085

Leu Ala Phe His Tyr Gly Leu Tyr Phe Tyr Thr Val Lys Phe Leu Ala
    1090   1095   1100

Val Val Phe Cys Leu Ile Gly Tyr Val Pro Ser Val Ile Leu Phe Thr
1105   1110   1115   1120

Tyr Ile Ala Ser Phe Thr Phe Lys Lys Ile Leu Asn Thr Lys Glu Phe
            1125   1130   1135

Trp Ser Phe Ile Tyr Ser Val Ala Ala Leu Xaa Cys Ile Ala Ile Thr
        1140   1145   1150

Glu Ile Thr Phe Phe Met Gly Tyr Thr Ile Ala Thr Ile Leu His Tyr
    1155   1160   1165

Ala Phe Cys Ile Ile Ile Pro Ile Tyr Pro Leu Leu Gly Cys Leu Ile

Ser Phe Ile Lys Ile Ser Trp Lys Asn Val Arg Lys Asn Val Asp Thr
1185   1190   1195   1200

Tyr Asn Pro Trp Asp Arg Leu Ser Val Ala Val Ile Ser Pro Tyr Leu
                    1205   1210   1215

Gln Cys Val Leu Trp Ile Phe Leu Leu Gln Tyr Tyr Glu Lys Lys Tyr
                    1220   1225   1230

Gly Gly Arg Ser Ile Arg Lys Asp Pro Phe Phe Arg Asn Leu Ser Thr
                    1235   1240   1245

Lys Ser Lys Asn Arg Lys Leu Pro Glu Pro Pro Asp Asn Glu Asp Glu
        1250   1255   1260

Asp Glu Asp Val Lys Ala Glu Arg Leu Lys Val Lys Glu Leu Met Gly
1265   1270   1275   1280

Cys Gln Cys Cys Glu Glu Lys Pro Ser Ile Met Val Ser Asn Leu His
                    1285   1290   1295

Lys Glu Tyr Asp Asp Lys Lys Asp Phe Leu Leu Ser Arg Lys Val Lys
                    1300   1305   1310

Lys Val Ala Thr Lys Tyr Ile Ser Phe Cys Val Lys Lys Gly Glu Ile
                    1315   1320   1325

Leu Gly Leu Leu Gly Pro Asn Gly Ala Gly Lys Ser Thr Ile Ile Asn
        1330   1335   1340

Ile Leu Val Gly Asp Ile Glu Pro Thr Ser Gly Gln Val Phe Leu Gly
1345   1350   1355   1360

Asp Tyr Ser Ser Glu Thr Ser Glu Asp Asp Asp Ser Leu Lys Cys Met
                    1365   1370   1375

Gly Tyr Cys Pro Gln Ile Asn Pro Leu Trp Pro Asp Thr Thr Leu Gln
                    1380   1385   1390

Glu His Phe Glu Ile Tyr Gly Ala Val Lys Gly Met Ser Ala Ser Asp
        1395   1400   1405

Met Lys Glu Val Ile Ser Arg Ile Thr His Ala Leu Asp Leu Lys Glu
        1410   1415   1420

His Leu Gln Lys Thr Val Lys Lys Leu Pro Ala Gly Ile Lys Arg Lys
                    1425   1430   1435   1440

Leu Cys Phe Ala Leu Ser Met Leu Gly Asn Pro Gln Ile Thr Leu Leu
                    1445   1450   1455

Asp Glu Pro Ser Thr Gly Met Asp Pro Lys Ala Lys Gln His Met Trp
        1460   1465   1470

Arg Ala Ile Arg Thr Ala Phe Lys Asn Arg Lys Arg Ala Ala Ile Leu
        1475   1480   1485

Thr Thr His Tyr Met Glu Glu Ala Glu Ala Val Cys Asp Arg Val Ala
        1490   1495   1500

Ile Met Val Ser Gly Gln Leu Arg Cys Ile Gly Thr Val Gln His Leu
1505   1510   1515   1520

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Lys Ser Lys Phe Gly Lys Gly Tyr Phe Leu Glu Ile Lys Leu Lys Asp
            1525            1530            1535

Trp Ile Glu Asn Leu Glu Val Asp Arg Leu Gln Arg Glu Ile Gln Tyr
                1540            1545            1550

Ile Phe Pro Asn Ala Ser Arg Gln Glu Ser Phe Ser Ser Ile Leu Ala
            1555            1560            1565

Tyr Lys Ile Pro Lys Glu Asp Val Gln Ser Leu Ser Gln Ser Phe Phe
    1570            1575            1580

Lys Leu Glu Glu Ala Lys His Ala Phe Ala Ile Glu Glu Tyr Ser Phe
1585            1590            1595            1600

Ser Gln Ala Thr Leu Glu Gln Val Phe Val Glu Leu Thr Lys Glu Gln
                1605            1610            1615

Glu Glu Glu Asp Asn Ser Cys Gly Thr Leu Asn Ser Thr Leu Trp Trp
            1620            1625            1630

Glu Arg Thr Gln Glu Asp Arg Val Val Phe
        1635            1640


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<212> PRT
<213> Homo sapiens

<400> 6
Met Asn Met Lys Gln Lys Ser Val Tyr Gln Gln Thr Lys Ala Leu Leu
    1               5               10              15

Cys Lys Asn Phe Leu Lys Lys Trp Arg Met Lys Arg Glu Ser Leu Leu
                20              25              30

Glu Trp Gly Leu Ser Ile Leu Leu Gly Leu Cys Ile Ala Leu Phe Ser
            35              40              45

Ser Ser Met Arg Asn Val Gln Phe Pro Gly Met Ala Pro Gln Asn Leu
        50              55              60

Gly Arg Val Asp Lys Phe Asn Ser Ser Ser Leu Met Val Val Tyr Thr
65              70              75              80

Pro Ile Ser Asn Leu Thr Gln Gln Ile Met Asn Lys Thr Ala Leu Ala
                85              90              95

Pro Leu Leu Lys Gly Thr Ser Val Ile Gly Ala Pro Asn Lys Thr His
            100             105             110

Met Asp Glu Ile Leu Leu Glu Asn Leu Pro Tyr Ala Met Gly Ile Ile
            115             120             125

Phe Asn Glu Thr Phe Ser Tyr Lys Leu Ile Phe Phe Gln Gly Tyr Asn
    130             135             140

Ser Pro Leu Trp Lys Glu Asp Phe Ser Ala His Cys Trp Asp Gly Tyr
145             150             155             160

Gly Glu Phe Ser Cys Thr Leu Thr Lys Tyr Trp Asn Arg Gly Phe Val
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Ala Leu Gln Thr Ala Ile Asn Thr Ala Ile Ile Glu Ile Thr Thr Asn
   180   185   190

His Pro Val Met Glu Glu Leu Met Ser Val Thr Ala Ile Thr Met Lys
  195   200   205

Thr Leu Pro Phe Ile Thr Lys Asn Leu Leu His Asn Glu Met Phe Ile
 210   215   220

Leu Phe Phe Leu Leu His Phe Ser Pro Leu Val Tyr Phe Ile Ser Leu
225   230   235   240

Asn Val Thr Lys Glu Arg Lys Lys Ser Lys Asn Leu Met Lys Met Met
   245   250   255

Gly Leu Gln Asp Ser Ala Phe Trp Leu Ser Trp Gly Leu Ile Tyr Ala
   260   265   270

Gly Phe Ile Phe Ile Ile Ser Ile Phe Ile Thr Ile Ile Ile Thr Phe
   275   280   285

Thr Gln Ile Ile Val Met Thr Gly Phe Met Val Ile Phe Ile Leu Phe
 290   295   300

Phe Leu Tyr Gly Leu Ser Leu Val Ala Leu Val Phe Leu Met Ser Val
305   310   315   320

Leu Leu Lys Lys Ala Val Leu Thr Asn Leu Val Val Phe Leu Leu Thr
   325   330   335

Leu Phe Trp Gly Cys Leu Gly Phe Thr Val Phe Tyr Glu Gln Leu Pro
   340   345   350

Ser Ser Leu Glu Trp Ile Leu Asn Ile Cys Ser Pro Phe Ala Phe Thr
   355   360   365

Thr Gly Met Ile Gln Ile Ile Lys Leu Asp Tyr Asn Leu Asn Gly Val
 370   375   380

Ile Phe Pro Asp Pro Ser Gly Asp Ser Tyr Thr Met Ile Ala Thr Phe
385   390   395   400

Ser Met Leu Leu Leu Asp Gly Leu Ile Tyr Leu Leu Leu Ala Leu Tyr
   405   410   415

Phe Asp Lys Ile Leu Pro Tyr Gly Asp Glu Arg His Tyr Ser Pro Leu
   420   425   430

Phe Phe Leu Asn Ser Ser Ser Cys Phe Gln His Gln Arg Thr Asn Ala
   435   440   445

Lys Val Ile Glu Lys Glu Ile Asp Ala Glu His Pro Ser Asp Asp Tyr
  450   455   460

Phe Glu Pro Val Ala Pro Glu Phe Gln Gly Lys Glu Ala Ile Arg Ile
465   470   475   480

Arg Asn Val Lys Lys Glu Tyr Lys Gly Lys Ser Gly Lys Val Glu Ala
   485   490   495

Leu Lys Gly Leu Leu Phe Asp Ile Tyr Glu Gly Gln Ile Thr Ala Ile
   500   505   510

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Leu Gly His Ser Gly Ala Gly Lys Ser Ser Leu Leu Asn Ile Leu Asn
        515                 520                 525

Gly Leu Ser Val Pro Thr Glu Gly Ser Val Thr Ile Tyr Asn Lys Asn
    530                 535                 540

Leu Ser Glu Met Gln Asp Leu Glu Glu Ile Arg Lys Ile Thr Gly Val
545                 550     .           555                 560

Cys Pro Gln Phe Asn Val Gln Phe Asp Ile Leu Thr Val Lys Glu Asn
                565                 570                 575

Leu Ser Leu Phe Ala Lys Ile Lys Gly Ile His Leu Lys Glu Val Glu
                580                 585                 590

Gln Glu Val Gln Arg Ile Leu Leu Glu Leu Asp Met Gln Asn Ile Gln
        595                 600                 605

Asp Asn Leu Ala Lys His Leu Ser Glu Gly Gln Lys Arg Lys Leu Thr
    610                 615                 620

Phe Gly Ile Thr Ile Leu Gly Asp Pro Gln Ile Leu Leu Leu Asp Glu
625                 630                 635                 640

Pro Thr Thr Gly Leu Asp Pro Phe Ser Arg Asp Gln Val Trp Ser Leu
                645                 650                 655

Leu Arg Glu Arg Arg Ala Asp His Val Ile Leu Phe Ser Thr Gln Ser
            660                 665                 670

Met Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Val Ile Met Ser Asn
        675                 680                 685

Gly Arg Leu Lys Cys Ala Gly Ser Ser Met Phe Leu Lys Arg Arg Trp
    690                 695                 700

Gly Leu Gly Tyr His Leu Ser Leu His Arg Asn Glu Ile Cys Asn Pro
705                 710                 715                 720

Glu Gln Ile Thr Ser Phe Ile Thr His His Ile Pro Asp Ala Lys Leu
                725                 730                 735

Lys Thr Glu Asn Lys Glu Lys Leu Val Tyr Thr Leu Pro Leu Glu Arg
                740                 745                 750

Thr Asn Thr Phe Pro Asp Leu Phe Ser Asp Leu Asp Lys Cys Ser Asp
                755                 760                 765

Gln Gly Val Thr Gly Tyr Asp Ile Ser Met Ser Thr Leu Asn Glu Val
    770                 775                 780

Phe Met Lys Leu Glu Gly Gln Ser Thr Ile Glu Gln Asp Phe Glu Gln
785                 790                 795                 800

Val Glu Met Ile Arg Asp Ser Glu Ser Leu Asn Glu Met Glu Leu Ala
                805                 810                 815

His Ser Ser Phe Ser Glu Met Gln Thr Ala Val Ser Asp Met Gly Leu
                820                 825                 830

Trp Arg Met Gln Val Phe Ala Met Ala Arg Leu Arg Phe Leu Lys Leu
    835                 840                 845
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Lys Arg Gln Thr Lys Val Leu Leu Thr Leu Leu Leu Val Phe Gly Ile
    850   855   860

Ala Ile Phe Pro Leu Ile Val Glu Asn Ile Ile Tyr Ala Met Leu Asn
865   870   875   880

Glu Lys Ile Asp Trp Glu Phe Lys Asn Glu Leu Tyr Phe Leu Ser Pro
            885   890   895

Gly Gln Leu Pro Gln Glu Pro Arg Thr Ser Leu Leu Ile Ile Asn Asn
            900   905   910

Thr Glu Ser Asn Ile Glu Asp Phe Ile Lys Ser Leu Lys His Gln Asn
        915   920   925

Ile Leu Leu Glu Val Asp Asp Phe Glu Asn Arg Asn Gly Thr Asp Gly
    930   935   940

Leu Ser Tyr Asn Gly Ala Ile Ile Val Ser Gly Lys Gln Lys Asp Tyr
945   950   955   960

Arg Phe Ser Val Val Cys Asn Thr Lys Arg Leu His Cys Phe Pro Ile
            965   970   975

Leu Met Asn Ile Ile Ser Asn Gly Leu Leu Gln Met Phe Asn His Thr
            980   985   990

Gln His Ile Arg Ile Glu Ser Ser Pro Phe Pro Leu Ser His Ile Gly
        995   1000   1005

Leu Trp Thr Gly Leu Pro Asp Gly Ser Phe Phe Leu Phe Leu Val Leu
    1010   1015   1020

Cys Ser Ile Ser Pro Tyr Ile Thr Met Gly Ser Ile Ser Asp Tyr Lys
1025   1030   1035   1040

Lys Asn Ala Lys Ser Gln Leu Trp Ile Ser Gly Leu Tyr Thr Ser Ala
            1045   1050   1055

Tyr Trp Cys Gly Gln Ala Leu Val Asp Val Ser Phe Phe Ile Leu Ile
            1060   1065   1070

Leu Leu Leu Met Tyr Leu Ile Phe Tyr Ile Glu Asn Met Gln Tyr Leu
            1075   1080   1085

Leu Ile Thr Ser Gln Ile Val Phe Ala Leu Val Ile Val Thr Pro Gly
    1090   1095   1100

Tyr Ala Ala Ser Leu Val Phe Phe Ile Tyr Met Ile Ser Phe Ile Phe
1105   1110   1115   1120

Arg Lys Arg Arg Lys Asn Ser Gly Leu Trp Ser Phe Tyr Phe Phe Phe
            1125   1130   1135

Ala Ser Thr Ile Met Phe Ser Ile Thr Leu Ile Asn His Phe Asp Leu
            1140   1145   1150

Ser Ile Leu Ile Thr Thr Met Val Leu Val Pro Ser Tyr Thr Leu Leu
    1155   1160   1165

Gly Phe Lys Thr Phe Leu Glu Val Arg Asp Gln Glu His Tyr Arg Glu
    1170   1175   1180

Phe Pro Glu Ala Asn Phe Glu Leu Ser Ala Thr Asp Phe Leu Val Cys

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1185                    1190                    1195                    1200
Phe Ile Pro Tyr Phe Gln Thr Leu Leu Phe Val Phe Val Leu Arg Cys
            1205                    1210                    1215
Met Glu Leu Lys Cys Gly Lys Lys Arg Met Arg Lys Asp Pro Val Phe
            1220                    1225                    1230
Arg Ile Ser Pro Gln Ser Arg Asp Ala Lys Pro Asn Pro Glu Glu Pro
      1235                    1240                    1245
Ile Asp Glu Asp Glu Asp Ile Gln Thr Glu Arg Ile Arg Thr Ala Thr
      1250                    1255                    1260
Ala Leu Thr Thr Ser Ile Leu Asp Glu Lys Pro Val Ile Ile Ala Ser
1265                    1270                    1275                    1280
Cys Leu His Lys Glu Tyr Ala Gly Gln Lys Lys Ser Cys Phe Ser Lys
            1285                    1290                    1295
Arg Lys Lys Lys Ile Ala Ala Arg Asn Ile Ser Phe Cys Val Gln Glu
            1300                    1305                    1310
Gly Glu Ile Leu Gly Leu Leu Gly Pro Ser Gly Ala Gly Lys Ser Ser
            1315                    1320                    1325
Ser Ile Arg Met Ile Ser Gly Ile Thr Lys Pro Thr Ala Gly Glu Val
      1330                    1335                    1340
Glu Leu Lys Gly Cys Ser Ser Val Leu Gly His Leu Gly Tyr Cys Pro
1345                    1350                    1355                    1360
Gln Glu Asn Val Leu Trp Pro Met Leu Thr Leu Arg Glu His Leu Glu
            1365                    1370                    1375
Val Tyr Ala Ala Val Lys Gly Leu Arg Lys Ala Asp Ala Arg Leu Ala
            1380                    1385                    1390
Ile Ala Arg Leu Val Ser Ala Phe Lys Leu His Glu Gln Leu Asn Val
      1395                    1400                    1405
Pro Val Gln Lys Leu Thr Ala Gly Ile Thr Arg Lys Leu Cys Phe Val
      1410                    1415                    1420
Leu Ser Leu Leu Gly Asn Ser Pro Val Leu Leu Leu Asp Glu Pro Ser
1425                    1430                    1435                    1440
Thr Gly Ile Asp Pro Thr Gly Gln Gln Gln Met Trp Gln Ala Ile Gln
            1445                    1450                    1455
Ala Val Val Lys Asn Thr Glu Arg Gly Val Leu Leu Thr Thr His Asn
            1460                    1465                    1470
Leu Ala Glu Ala Glu Ala Leu Cys Asp Arg Val Ala Ile Met Val Ser
      1475                    1480                    1485
Gly Arg Leu Arg Cys Ile Gly Ser Ile Gln His Leu Lys Asn Lys Leu
      1490                    1495                    1500
Gly Lys Asp Tyr Ile Leu Glu Leu Lys Val Lys Glu Thr Ser Gln Val
1505                    1510                    1515                    1520
Thr Leu Val His Thr Glu Ile Leu Lys Leu Phe Pro Gln Ala Ala Gly
            1525                    1530                    1535
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Gln Glu Arg Tyr Ser Ser Leu Leu Thr Tyr Lys Leu Pro Val Ala Asp
        1540            1545            1550

Val Tyr Pro Leu Ser Gln Thr Phe His Lys Leu Glu Ala Val Lys His
        1555            1560            1565

Asn Phe Asn Leu Glu Glu Tyr Ser Leu Ser Gln Cys Thr Leu Glu Lys
    1570            1575            1580

Val Phe Leu Glu Leu Ser Lys Glu Gln Glu Val Gly Asn Phe Asp Glu
1585            1590            1595            1600

Glu Ile Asp Thr Thr Met Arg Trp Lys Leu Leu Pro His Ser Asp Glu
            1605            1610            1615

Pro




<210> 7
<211> 1624
<212> PRT
<213> Homo sapiens

<400> 7
Met Ser Lys Arg Arg Met Ser Val Gly Gln Gln Thr Trp Ala Leu Leu
1               5               10              15

Cys Lys Asn Cys Leu Lys Lys Trp Arg Met Lys Arg Gln Thr Leu Leu
            20              25              30

Glu Trp Leu Phe Ser Phe Leu Leu Val Leu Phe Leu Tyr Leu Phe Phe
            35              40              45

Ser Asn Leu His Gln Val His Asp Thr Pro Gln Met Ser Ser Met Asp
    50              55              60

Leu Gly Arg Val Asp Ser Phe Asn Asp Thr Asn Tyr Val Ile Ala Phe
65              70              75              80

Ala Pro Glu Ser Lys Thr Thr Gln Glu Ile Met Asn Lys Val Ala Ser
            85              90              95

Ala Pro Phe Leu Lys Gly Arg Thr Ile Met Gly Trp Pro Asp Glu Lys
            100             105             110

Ser Met Asp Glu Leu Asp Leu Asn Tyr Ser Ile Asp Ala Val Arg Val
    115             120             125

Ile Phe Thr Asp Thr Phe Ser Tyr His Leu Lys Phe Ser Trp Gly His
    130             135             140

Arg Ile Pro Met Met Lys Glu His Arg Asp His Ser Ala His Cys Gln
145             150             155             160

Ala Val Asn Glu Lys Met Lys Cys Glu Gly Ser Glu Phe Trp Glu Lys
            165             170             175

Gly Phe Val Ala Phe Gln Ala Ala Ile Asn Ala Ala Ile Ile Glu Ile
            180             185             190

Ala Thr Asn His Ser Val Met Glu Gln Leu Met Ser Val Thr Gly Val
                        Page 18
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                195                 200                 205
His Met Lys Ile Leu Pro Phe Val Ala Gln Gly Gly Val Ala Thr Asp
    210             215             220
Phe Phe Ile Phe Phe Cys Ile Ile Ser Phe Ser Thr Phe Ile Tyr Tyr
225             230             235             240
Val Ser Val Asn Val Thr Gln Glu Arg Gln Tyr Ile Thr Ser Leu Met
            245             250             255
Thr Met Met Gly Leu Arg Glu Ser Ala Phe Trp Leu Ser Trp Gly Leu
        260             265             270
Met Tyr Ala Gly Phe Ile Leu Ile Met Ala Thr Leu Met Ala Leu Ile
    275             280             285
Val Lys Ser Ala Gln Ile Val Val Leu Thr Gly Phe Val Met Val Phe
    290             295             300
Thr Leu Phe Leu Leu Tyr Gly Leu Ser Leu Ile Thr Leu Ala Phe Leu
305             310             315             320
Met Ser Val Leu Ile Lys Lys Pro Phe Leu Thr Gly Leu Val Val Phe
            325             330             335
Leu Leu Ile Val Phe Trp Gly Ile Leu Gly Phe Pro Ala Leu Tyr Thr
            340             345             350
His Leu Pro Ala Phe Leu Glu Trp Thr Leu Cys Leu Leu Ser Pro Phe
        355             360             365
Ala Phe Thr Val Gly Met Ala Gln Leu Ile His Leu Asp Tyr Asp Val
    370             375             380
Asn Ser Asn Ala His Leu Asp Ser Ser Gln Asn Pro Tyr Leu Ile Ile
385             390             395             400
Ala Thr Leu Phe Met Leu Val Phe Asp Thr Leu Leu Tyr Leu Val Leu
            405             410             415
Thr Leu Tyr Phe Asp Lys Ile Leu Pro Ala Glu Tyr Gly His Arg Cys
            420             425             430
Ser Pro Leu Phe Phe Leu Lys Ser Cys Phe Trp Phe Gln His Gly Arg
        435             440             445
Ala Asn His Val Val Leu Glu Asn Glu Thr Asp Ser Asp Pro Thr Pro
    450             455             460
Asn Asp Cys Phe Glu Pro Val Ser Pro Glu Phe Cys Gly Lys Glu Ala
465             470             475             480
Ile Arg Ile Lys Asn Leu Lys Lys Glu Tyr Ala Gly Lys Cys Glu Arg
            485             490             495
Val Glu Ala Leu Lys Gly Val Val Phe Asp Ile Tyr Glu Gly Gln Ile
            500             505             510
Thr Ala Leu Leu Gly His Ser Gly Ala Gly Lys Thr Thr Leu Leu Asn
            515             520             525
Ile Leu Ser Gly Leu Ser Val Pro Thr Ser Gly Ser Val Thr Val Tyr
    530             535             540
                         Page 19
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Asn His Thr Leu Ser Arg Met Ala Asp Ile Glu Asn Ile Ser Lys Phe
545   550   555   560

Thr Gly Phe Cys Pro Gln Ser Asn Val Gln Phe Gly Phe Leu Thr Val
            565   570   575

Lys Glu Asn Leu Arg Leu Phe Ala Lys Ile Lys Gly Ile Leu Pro His
            580   585   590

Glu Val Glu Lys Glu Val Gln Arg Val Val Gln Glu Leu Glu Met Glu
        595   600   605

Asn Ile Gln Asp Ile Leu Ala Gln Asn Leu Ser Gly Gly Gln Asn Arg
    610   615   620

Lys Leu Thr Phe Gly Ile Ala Ile Leu Gly Asp Pro Gln Val Leu Leu
625   630   635   640

Leu Asp Glu Pro Thr Ala Gly Leu Asp Pro Leu Ser Arg His Arg Ile
            645   650   655

Trp Asn Leu Leu Lys Glu Gly Lys Ser Asp Arg Val Ile Leu Phe Ser
            660   665   670

Thr Gln Phe Ile Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Val Phe
            675   680   685

Ile Ser Asn Gly Lys Leu Lys Cys Ala Gly Ser Ser Leu Phe Leu Lys
    690   695   700

Lys Lys Trp Gly Ile Gly Tyr His Leu Ser Leu His Leu Asn Glu Arg
705   710   715   720

Cys Asp Pro Glu Ser Ile Thr Ser Leu Val Lys Gln His Ile Ser Asp
            725   730   735

Ala Lys Leu Thr Ala Gln Ser Glu Glu Lys Leu Val Tyr Ile Leu Pro
            740   745   750

Leu Glu Arg Thr Asn Lys Phe Pro Glu Leu Tyr Arg Asp Leu Asp Arg
            755   760   765

Cys Ser Asn Gln Gly Ile Glu Asp Tyr Gly Val Ser Ile Thr Thr Leu
    770   775   780

Asn Glu Val Phe Leu Lys Leu Glu Gly Lys Ser Thr Ile Asp Glu Ser
785   790   795   800

Asp Ile Gly Ile Trp Gly Gln Leu Gln Thr Asp Gly Ala Lys Asp Ile
            805   810   815

Gly Ser Leu Val Glu Leu Glu Gln Val Leu Ser Ser Phe His Glu Thr
            820   825   830

Arg Lys Thr Ile Ser Gly Val Ala Leu Trp Arg Gln Gln Val Cys Ala
            835   840   845

Ile Ala Lys Val Arg Phe Leu Lys Leu Lys Lys Glu Arg Lys Ser Leu
    850   855   860

Trp Thr Ile Leu Leu Leu Phe Gly Ile Ser Phe Ile Pro Gln Leu Leu
865   870   875   880

Glu His Leu Phe Tyr Glu Ser Tyr Gln Lys Ser Tyr Pro Trp Glu Leu
885   890   895

Ser Pro Asn Thr Tyr Phe Leu Ser Pro Gly Gln Gln Pro Gln Asp Pro
900   905   910

Leu Thr His Leu Leu Val Ile Asn Lys Thr Gly Ser Thr Ile Asp Asn
915   920   925

Phe Leu His Ser Leu Arg Arg Gln Asn Ile Ala Ile Glu Val Asp Ala
930   935   940

Phe Gly Thr Arg Asn Gly Thr Asp Asp Pro Ser Tyr Asn Gly Ala Ile
945   950   955   960

Ile Val Ser Gly Asp Glu Lys Asp His Arg Phe Ser Ile Ala Cys Asn
965   970   975

Thr Lys Arg Leu Asn Cys Phe Pro Val Leu Leu Asp Val Ile Ser Asn
980   985   990

Gly Leu Leu Gly Ile Phe Asn Ser Ser Glu His Ile Gln Thr Asp Arg
995   1000   1005

Ser Thr Phe Phe Glu Glu His Met Asp Tyr Glu Tyr Gly Tyr Arg Ser
1010   1015   1020

Asn Thr Phe Phe Trp Ile Pro Met Ala Ala Ser Phe Thr Pro Tyr Ile
1025   1030   1035   1040

Ala Met Ser Ser Ile Gly Asp Tyr Lys Lys Lys Ala His Ser Gln Leu
1045   1050   1055

Arg Ile Ser Gly Leu Tyr Pro Ser Ala Tyr Trp Phe Gly Gln Ala Leu
1060   1065   1070

Val Asp Val Ser Leu Tyr Phe Leu Ile Leu Leu Leu Met Gln Ile Met
1075   1080   1085

Asp Tyr Ile Phe Ser Pro Glu Glu Ile Ile Phe Ile Ile Gln Asn Leu
1090   1095   1100

Leu Ile Gln Ile Leu Cys Ser Ile Gly Tyr Val Ser Ser Leu Val Phe
1105   1110   1115   1120

Leu Thr Tyr Val Ile Ser Phe Ile Phe Arg Asn Gly Arg Lys Asn Ser
1125   1130   1135

Gly Ile Trp Ser Phe Phe Phe Leu Ile Val Val Ile Phe Ser Ile Val
1140   1145   1150

Ala Thr Asp Leu Asn Glu Tyr Gly Phe Leu Gly Leu Phe Phe Gly Thr
1155   1160   1165

Met Leu Ile Pro Pro Phe Thr Leu Ile Gly Ser Leu Phe Ile Phe Ser
1170   1175   1180

Glu Ile Ser Pro Asp Ser Met Asp Tyr Leu Gly Ala Ser Glu Ser Glu
1185   1190   1195   1200

Ile Val Tyr Leu Ala Leu Leu Ile Pro Tyr Leu His Phe Leu Ile Phe
1205   1210   1215

Leu Phe Ile Leu Arg Cys Leu Glu Met Asn Cys Arg Lys Lys Leu Met

Arg Lys Asp Pro Val Phe Arg Ile Ser Pro Arg Ser Asn Ala Ile Phe
       1235   1240   1245

Pro Asn Pro Glu Glu Pro Glu Gly Glu Glu Glu Asp Ile Gln Met Glu
   1250   1255   1260

Arg Met Arg Thr Val Asn Ala Met Ala Val Arg Asp Phe Asp Glu Thr
1265   1270   1275   1280

Pro Val Ile Ile Ala Ser Cys Leu Arg Lys Glu Tyr Ala Gly Lys Lys
        1285   1290   1295

Lys Asn Cys Phe Ser Lys Arg Lys Lys Thr Ile Ala Thr Arg Asn Val
       1300   1305   1310

Ser Phe Cys Val Lys Lys Gly Glu Val Ile Gly Leu Leu Gly His Asn
      1315   1320   1325

Gly Ala Gly Lys Ser Thr Thr Ile Lys Met Ile Thr Gly Asp Thr Lys
   1330   1335   1340

Pro Thr Ala Gly Gln Val Ile Leu Lys Gly Ser Gly Gly Gly Glu Pro
1345   1350   1355   1360

Leu Gly Phe Leu Gly Tyr Cys Pro Gln Glu Asn Ala Leu Trp Pro Asn
        1365   1370   1375

Leu Thr Val Arg Gln His Leu Glu Val Tyr Ala Ala Val Lys Gly Leu
      1380   1385   1390

Arg Lys Gly Asp Ala Met Ile Ala Ile Thr Arg Leu Val Asp Ala Leu
      1395   1400   1405

Lys Leu Gln Asp Gln Leu Lys Ala Pro Val Lys Thr Leu Ser Glu Gly
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Ile Lys Arg Lys Leu Arg Phe Val Leu Ser Ile Leu Gly Asn Pro Ser
1425   1430   1435   1440

Val Val Leu Leu Asp Glu Pro Ser Thr Gly Met Asp Pro Glu Gly Gln
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Gln Gln Met Trp Gln Val Ile Arg Ala Thr Phe Arg Asn Thr Glu Arg
        1460   1465   1470

Gly Ala Leu Leu Thr Thr His Tyr Met Ala Glu Ala Glu Ala Val Cys
      1475   1480   1485

Asp Arg Val Ala Ile Met Val Ser Gly Arg Leu Arg Cys Ile Gly Ser
      1490   1495   1500

Ile Gln His Leu Lys Ser Lys Phe Gly Lys Asp Tyr Leu Leu Glu Met
1505   1510   1515   1520

Lys Leu Lys Asn Leu Ala Gln Met Glu Pro Leu His Ala Glu Ile Leu
        1525   1530   1535

Arg Leu Phe Pro Gln Ala Ala Gln Gln Glu Arg Phe Ser Ser Leu Met
        1540   1545   1550

Val Tyr Lys Leu Pro Val Glu Asp Val Arg Pro Leu Ser Gln Ala Phe
     1555   1560   1565

Phe Lys Leu Glu Ile Val Lys Gln Ser Phe Asp Leu Glu Glu Tyr Ser
    1570   1575   1580

Leu Ser Gln Ser Thr Leu Glu Gln Val Phe Leu Glu Leu Ser Lys Glu
1585   1590   1595   1600

Gln Glu Leu Gly Asp Leu Glu Glu Asp Phe Asp Pro Ser Val Lys Trp
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Lys Leu Leu Leu Gln Glu Glu Pro
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His Glu Met Val Gly Val Ile Phe Ser Asp Thr Phe Ser Tyr Arg Leu
            35   40   45

Lys Phe Asn Trp Gly Tyr Arg Ile Pro Val Ile Lys Glu His Ser Glu
    50   55   60

Tyr Thr Glu His Cys Trp Ala Met His Gly Glu Ile Phe Cys Tyr Leu
65   70   75   80

Ala Lys Tyr Trp Leu Lys Gly Phe Val Ala Phe Gln Ala Ala Ile Asn
                85   90   95

Ala Ala Ile Ile Glu Val Thr Thr Asn His Ser Val Met Glu Glu Leu
            100   105   110

Thr Ser Val Ile Gly Ile Asn Met Lys Ile Pro Pro Phe Ile Ser Lys
        115   120   125

Gly Glu Ile Met Asn Glu Trp Phe His Phe Thr Cys Leu Val Ser Phe
    130   135   140

Ser Ser Phe Ile Tyr Phe Ala Ser Leu Asn Val Ala Arg Glu Arg Gly
145   150   155   160

Lys Phe Lys Lys Leu Met Thr Val Met Gly Leu Arg Glu Ser Ala Phe
            165   170   175

Trp Leu Ser Trp Xaa Leu Thr Tyr Ile Cys Phe Ile Phe Ile Met Ser
            180   185   190

Ile Phe Met Ala Leu Val Ile Thr Ser Ile Ser Ile Val Phe His Thr
    195   200   205

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Gly Phe Met Val Ile Phe Thr Leu Tyr Ser Leu Tyr Gly Leu Ser Leu
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Ile Ala Leu Ala Phe Leu Met Ser Val Leu Ile Arg Lys Pro Met Leu
225             230             235             240

Ala Gly Leu Ala Gly Phe Leu Phe Thr Val Phe Trp Gly Cys Leu Gly
                245             250             255

Phe Thr Val Leu Tyr Arg Gln Leu Pro Leu Ser Leu Gly Trp Val Leu
            260             265             270

Ser Leu Leu Ser Pro Phe Ala Phe Thr Ala Gly Met Ala Gln Val Thr
        275             280             285

His Leu Asp Asn Tyr Leu Ser Gly Val Ile Phe Pro Asp Pro Ser Gly
    290             295             300

Asp Ser Tyr Lys Met Ile Ala Thr Phe Phe Ile Leu Ala Phe Asp Thr
305             310             315             320

Leu Phe Tyr Leu Ile Phe Thr Leu Tyr Phe Glu Arg Val Leu Pro Asp
            325             330             335

Lys Asp Gly His Gly Asp Ser Pro Leu Phe Phe Leu Lys Ser Ser Phe
            340             345             350

Trp Ser Lys His Gln Asn Thr His His Glu Ile Phe Glu Asn Glu Ile
        355             360             365

Asn Pro Glu His Ser Ser Asp Asp Ser Phe Glu Pro Val Ser Pro Glu
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Phe His Gly Lys Glu Ala Ile Arg Ile Arg Asn Val Ile Lys Glu Tyr
385             390             395             400

Asn Gly Lys Thr Gly Lys Val Glu Ala Leu Gln Gly Ile Phe Phe Asp
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Ile Tyr Glu Gly Gln Ile Thr Ala Ile Leu Gly His Asn Gly Ala Gly
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Lys Ser Thr Leu Leu Asn Ile Leu Ser Gly Leu Ser Val Ser Thr Glu
        435             440             445

Gly Ser Ala Thr Ile Tyr Asn Thr Gln Leu Ser Glu Ile Thr Asp Met
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Glu Glu Ile Arg Lys Asn Ile Gly Phe Cys Pro Gln Phe Asn Phe Gln
465             470             475             480

Phe Asp Phe Leu Thr Val Arg Glu Asn Leu Arg Val Phe Ala Lys Ile
            485             490             495

Lys Gly Ile Gln Pro Lys Glu Val Glu Gln Glu Val Lys Arg Ile Ile
            500             505             510

Met Glu Leu Asp Met Gln Ser Ile Gln Asp Ile Ile Ala Lys Lys Leu
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Ser Gly Gly Gln Lys Arg Lys Leu Thr Leu Gly Ile Ala Ile Leu Gly
    530             535             540
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Asp Pro Gln Val Leu Leu Leu Asp Glu Pro Thr Ala Gly Leu Asp Pro
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Arg Leu Ile Leu Phe Ser Thr Gln Phe Met Asp Glu Ala Asp Ile Leu
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Ala Asp Arg Lys Val Phe Leu Ser Asn Gly Lys Leu Lys Cys Ala Gly
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Ser Ser Leu Phe Leu Lys Arg Lys Trp Gly Ile Gly Tyr His Leu Ser
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Leu His Arg Asn Glu Met Cys Asp Thr Glu Lys Ile Thr Ser Leu Ile
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Lys Gln His Ile Pro Asp Ala Lys Leu Thr Thr Glu Ser Glu Glu Lys
645   650   655

Leu Val Tyr Ser Leu Pro Leu Glu Lys Thr Asn Lys Phe Pro Asp Leu
660   665   670

Tyr Ser Asp Leu Asp Lys Cys Ser Asp Gln Gly Ile Arg Asn Tyr Ala
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Val Ser Val Thr Ser Leu Asn Glu Val Phe Leu Asn Leu Glu Gly Lys
690   695   700

Ser Ala Ile Asp Glu Pro Asp Phe Asp Ile Gly Lys Gln Glu Lys Ile
705   710   715   720

His Val Thr Arg Asn Thr Gly Asp Glu Ser Glu Met Glu Gln Val Leu
725   730   735

Cys Ser Leu Pro Glu Thr Arg Lys Ala Val Ser Ser Ala Ala Leu Trp
740   745   750

Arg Arg Gln Ile Tyr Ala Val Ala Thr Leu Arg Phe Leu Lys Leu Arg
755   760   765

Arg Glu Arg Arg Ala Leu Leu Cys Leu Leu Leu Val Leu Gly Ile Ala
770   775   780

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785   790   795   800

Thr His Cys Trp Glu Phe Ser Pro Ser Met Tyr Phe Leu Ser Leu Glu
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Gln Ile Pro Lys Thr Pro Leu Thr Ser Leu Leu Ile Val Asn Asn Thr
820   825   830

Gly Ser Asn Ile Glu Asp Leu Val His Ser Leu Lys Cys Gln Asp Ile
835   840   845

Val Leu Glu Ile Asp Asp Phe Arg Asn Arg Asn Gly Ser Asp Asp Pro
850   855   860

Ser Tyr Asn Gly Ala Ile Ile Val Ser Gly Asp Gln Lys Asp Tyr Arg
865   870   875   880

Phe Ser Val Ala Cys Asn Thr Lys Lys Leu Asn Cys Phe Pro Val Leu
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Met Gly Ile Val Ser Asn Ala Leu Met Gly Ile Phe Asn Phe Thr Glu
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Leu Ile Gln Thr Glu Ser Thr Ser Phe Ser Arg Asp Asp Ile Val Leu
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Asp Leu Gly Phe Ile Asp Gly Ser Ile Phe Leu Leu Leu Ile Thr Asn
      930                  935                  940
Cys Val Ser Pro Phe Ile Gly Met Ser Ser Ile Ser Asp Tyr Lys Lys
945                  950                  955                  960
Asn Val Gln Ser Gln Leu Trp Ile Ser Gly Leu Trp Pro Ser Ala Tyr
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Trp Cys Gly Gln Ala Leu Val Asp Ile Pro Leu Tyr Phe Leu Ile Leu
                980                  985                  990
Phe Ser Ile His Leu Ile Tyr Tyr Phe Ile Phe Leu Gly Phe Gln Leu
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Ser Trp Glu Leu Met Phe Val Leu Val Val Cys Ile Ile Gly Cys Ala
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Trp Arg Lys Asn Asn Gly Phe Trp Ser Phe Gly Phe Phe Ile Ile Leu
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Ile Cys Val Ser Thr Ile Met Val Ser Thr Gln Tyr Glu Lys Leu Asn
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Leu Ile Leu Cys Met Ile Phe Ile Pro Ser Phe Thr Leu Leu Gly Tyr
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Val Met Leu Leu Ile Gln Leu Asp Phe Met Arg Asn Leu Asp Ser Leu
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Ile Ser Pro Arg Ser Arg Glu Thr His Pro Asn Pro Glu Glu Pro Glu
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Glu Glu Asp Glu Asp Val Gln Ala Glu Arg Val Gln Ala Ala Asn Ala
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Leu Thr Ala Pro Asn Leu Glu Glu Glu Pro Val Ile Thr Ala Ser Cys
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Leu His Lys Glu Tyr Tyr Glu Thr Lys Lys Ser Cys Phe Ser Thr Arg
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Lys Lys Lys Ile Ala Ile Arg Asn Val Ser Phe Cys Val Lys Lys Gly
      1220                  1225                  1230
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Glu Val Leu Gly Leu Leu Gly His Asn Gly Ala Gly Lys Ser Thr Ser
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Leu Gln Gly Ser Arg Ala Ser Val Arg Gln Gln His Asp Asn Ser Leu
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Lys Phe Leu Gly Tyr Cys Pro Gln Glu Asn Ser Leu Trp Pro Lys Leu
              1285                1290                1295

Thr Met Lys Glu His Leu Glu Leu Tyr Ala Ala Val Lys Gly Leu Gly
            1300                1305                1310

Lys Glu Asp Ala Ala Leu Ser Ile Ser Arg Leu Val Glu Ala Leu Lys
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Leu Gln Glu Gln Leu Lys Ala Pro Val Lys Thr Leu Ser Glu Gly Ile
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Lys Arg Lys Leu Cys Phe Val Leu Ser Ile Leu Gly Asn Pro Ser Val
1345                1350                1355                1360

Val Leu Leu Asp Glu Pro Phe Thr Gly Met Asp Pro Glu Gly Gln Gln
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Gln Met Trp Gln Ile Leu Gln Ala Thr Val Lys Asn Lys Glu Arg Gly
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Thr Leu Leu Thr Thr His Tyr Met Ser Glu Ala Glu Ala Val Cys Asp
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Arg Met Ala Met Met Val Ser Gly Thr Leu Arg Cys Ile Gly Ser Ile
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Gln His Leu Lys Asn Lys Phe Gly Arg Asp Tyr Leu Leu Glu Ile Lys
1425                1430                1435                1440

Met Lys Glu Pro Thr Gln Val Glu Ala Leu His Thr Glu Ile Leu Lys
              1445                1450                1455

Leu Phe Pro Gln Ala Ala Trp Gln Glu Arg Tyr Ser Ser Leu Met Ala
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Tyr Lys Leu Pro Val Glu Asp Val His Pro Leu Ser Arg Ala Phe Phe
        1475                1480                1485

Lys Leu Glu Ala Met Lys Gln Thr Phe Asn Leu Glu Glu Tyr Ser Leu
    1490                1495                1500

Ser Gln Ala Thr Leu Glu Gln Val Phe Leu Glu Leu Cys Lys Glu Gln
1505                1510                1515                1520

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tcttctttaa tggttgtgta tacaccaata tctaatttaa cccagcagat aatgaataaa 180
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ttttaaaatt attcttcctc tcaaacatag gggtgatagc aaacctgtga taaaggcaat 300
acaaaatatt agtaaagtca cccaaagagt caggcactgg gtattgtgga aataaaacta 360
tataaactt   369

<210> 48
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<212> DNA
<213> Homo sapiens

<400> 48
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tctcctccag aacatgcaga gacccatgga tgaactgtgt ttctagattt ttcctccagc 120
tttcctgaga   130

<210> 49
<211> 109
<212> DNA
<213> Homo sapiens

<400> 49
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ctgcaagaac tgtctcaaaa aatggagaat gaaaagacag accttgttg   109

<210> 50
<211> 208
<212> DNA
<213> Homo sapiens

<400> 50
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caagttcatg acactcctca aatgtcttca atggatctgg gacgtgtaga tagttttaat 120
gatactaatt atgttattgc atttgcacct gaatccaaaa ctacccaaga gataatgaac 180
aaagtggctt cagccccatt cctaaaag   208

<210> 51
<211> 165
<212> DNA
<213> Homo sapiens

<400> 51
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caatagacgc agtgagagtc atctttactg ataccttctc ctaccatttg aagtttctt 120
ggggacatag aatccccatg atgaaagagc acagagacca ttcag 165

<210> 52
<211> 104
<212> DNA
<213> Homo sapiens

<400> 52
ctcactgtca agcagtgaat gaaaaaatga agtgtgaagg ttcagagttc tgggagaaag 60
gctttgtagc ttttcaagct gccattaatg ctgctatcat agaa 104

<210> 53
<211> 227
<212> DNA
<213> Homo sapiens

<400> 53
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atattacctt ttgttgccca aggaggagtt gcaactgatt tttcatttt cttttgcatt 120
atttctttt ctacatttat atactatgta tcagtcaatg ttacacaaga aagacaatac 180
attacgtcat tgatgacaat gatgggactc cgagagtcag cattctg 227

<210> 54
<211> 142
<212> DNA
<213> Homo sapiens

<400> 54
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tattgtaaaa tctgcacaaa ttgtcgtcct gactggtttt gtgatggtct tcaccctctt 120
tctcctctat ggcctgtctt tg 142

<210> 55
<211> 186
<212> DNA
<213> Homo sapiens

<400> 55
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gtgtttctcc ttattgtctt ttggggggatc ctgggattcc cagcattgta tacacatctt 120
cctgcatttt tggaatggac tttgtgtctt cttagcccct ttgccttcac tgttgggatg 180
gcccag 186

<210> 56
<211> 148
<212> DNA
<213> Homo sapiens

<400> 56
cttatacatt tggactatga tgtgaattct aatgcccact tggattcttc acaaaatcca 60
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tacctcataa tagctactct tttcatgttg gtttttgaca cccttctgta tttggtattg 120
acattatatt ttgacaaaat tttgcccg                                    148


<210> 57
<211> 169
<212> DNA
<213> Homo sapiens

<400> 57
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acggaagggc taatcatgtg gtccttgaga atgaaacaga ttctgatcct acacctaatg 120
actgttttga accagtgtct ccagaattct gtgggaagga agccatcag             169


<210> 58
<211> 59
<212> DNA
<213> Homo sapiens

<400> 58
aatcaaaaat cttaaaaaag aatatgcagg gaagtgtgag agagtagaag ctttgaaag   59


<210> 59
<211> 111
<212> DNA
<213> Homo sapiens

<400> 59
gtgtggtgtt tgacatatat gaaggccaga tcactgccct ccttggtcac agtggagctg 60
gaaaaactac cctgttaaac atacttagtg ggttgtcagt tccaacatca g          111


<210> 60
<211> 176
<212> DNA
<213> Homo sapiens

<400> 60
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agttcactgg attttgtcca caatccaatg tgcaatttgg atttctcact gtgaaagaaa 120
acctcaggct gtttgctaaa ataaaaggga ttttgccaca tgaagtggag aaagag      176


<210> 61
<211> 120
<212> DNA
<213> Homo sapiens

<400> 61
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ttaagtggtg gacaaaatag gaaactaact tttgggattg ccattttagg agatcctcaa 120


<210> 62
<211> 139
<212> DNA
<213> Homo sapiens

<400> 62
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aatctcctga aagaggggaa atcagacaga gtaattctct tcagcaccca gtttatagat 120
gaggctgaca ttctggcgg                                              139
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<210> 63
<211> 91
<212> DNA
<213> Homo sapiens

<400> 63
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agaagaaatg gggcataggc taccatttaa g 91

<210> 64
<211> 140
<212> DNA
<213> Homo sapiens

<400> 64
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ctctgatgcc aaattgacag cacaaagtga agaaaaactt gtatatattt tgcctttgga 120
aaggacaaac aaatttccag 140

<210> 65
<211> 120
<212> DNA
<213> Homo sapiens

<400> 65
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taacaacttt gaatgaggtg tttctgaaat tagaaggaaa atcaactatt gatgaatcag 120

<210> 66
<211> 199
<212> DNA
<213> Homo sapiens

<400> 66
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agctggaaca agttttgtct tccttccacg aaacaaggaa aacaatcagt ggcgtggcgc 120
tctggaggca gcaggtctgt gcaatagcaa aagttcgctt cctaaagtta aagaaagaaa 180
gaaaaagcct gtggactat 199

<210> 67
<211> 167
<212> DNA
<213> Homo sapiens

<400> 67
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atatcagaaa agttacccgt gggaactgtc tccaaataca tacttcctct caccaggaca 120
acaaccacag gatcctctga cccatttact ggtcatcaat aagacag 167

<210> 68
<211> 134
<212> DNA
<213> Homo sapiens

<400> 68
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atgcctttgg aactagaaat ggcacagatg acccatctta caatggtgct atcattgtgt 120

caggtgatga aaag

<210> 69
<211> 138
<212> DNA
<213> Homo sapiens

<400> 69
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gatgtcatta gcaatggact acttggaatt tttaattcgt cagaacacat tcagactgac 120
agaagcacat tttttgaa 138

<210> 70
<211> 108
<212> DNA
<213> Homo sapiens

<400> 70
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gcctctttca ctccatacat tgcaatgagc agcattggtg actacaaa 108

<210> 71
<211> 174
<212> DNA
<213> Homo sapiens

<400> 71
aaaaaagctc attcccagct acggatttca ggcctctacc cttctgcata ctggtttggc 60
caagcactgg tggatgtttc cctgtacttt ttgatcctcc tgctaatgca aataatggat 120
tatattttta gcccagagga gattatattt ataattcaaa acctgttaat tcaa 174

<210> 72
<211> 114
<212> DNA
<213> Homo sapiens

<400> 72
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atttttcgca atgggagaaa aaatagtggc atttggtcat ttttcttctt aatt 114

<210> 73
<211> 120
<212> DNA
<213> Homo sapiens

<400> 73
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tttggcacca tgttaatacc tcccttcaca ttgattggct ctctattcat tttttctgag 120

<210> 74
<211> 69
<212> DNA
<213> Homo sapiens

<400> 74
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ctgctaata 69

<210> 75
<211> 92
<212> DNA
<213> Homo sapiens

<400> 75
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aagaaactaa tgagaaagga tcctgtgttc ag   92

<210> 76
<211> 121
<212> DNA
<213> Homo sapiens

<400> 76
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agatatccag atggaaagaa tgagaacagt gaatgctatg gctgtgcgag actttgatga 120
g   121

<210> 77
<211> 118
<212> DNA
<213> Homo sapiens

<400> 77
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ttttctaaaa ggaagaaaac aattgccaca agaaatgtct cttttgtgt taaaaaag   118

<210> 78
<211> 92
<212> DNA
<213> Homo sapiens

<400> 78
gtgaagttat aggactgtta ggacacaatg gagctggtaa aagtacaact attaagatga 60
taactggaga cacaaaacca actgcaggac ag   92

<210> 79
<211> 161
<212> DNA
<213> Homo sapiens

<400> 79
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gagaatgcgc tgtggcccaa cctgacagtg aggcagcacc tggaggtgta cgctgccgtg 120
aaaggtctca ggaaagggga cgcaatgatc gccatcacac g   161

<210> 80
<211> 76
<212> DNA
<213> Homo sapiens

<400> 80
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gggaataaag cgaaag   76

<210> 81

<211> 95
<212> DNA
<213> Homo sapiens

<400> 81
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accgggatgg accccgaggg gcagcagcaa atgtg   95

<210> 82
<211> 120
<212> DNA
<213> Homo sapiens

<400> 82
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catggcagag gctgaggcgg tgtgtgaccg agtggccatc atggtgtcag gaaggctgag 120

<210> 83
<211> 141
<212> DNA
<213> Homo sapiens

<400> 83
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gaagctgaag aacctggcac aaatggagcc cctccatgca gagatcctga ggcttttccc 120
ccaggctgct cagcaggaaa g   141

<210> 84
<211> 80
<212> DNA
<213> Homo sapiens

<400> 84
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tttcttcaaa ttagagatag   80

<210> 85
<211> 56
<212> DNA
<213> Homo sapiens

<400> 85
ttaaacagag tttcgacctg gaggagtaca gcctctcaca gtctaccctg gagcag   56

<210> 86
<211> 1062
<212> DNA
<213> Homo sapiens

<400> 86
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tcggtgaagt ggaaactcct cctgcaggaa gagccttaaa gctccaaata ccctatatct 120
ttctttaatc ctgtgactct tttaaagata atattttata gccttaatat gccttatatc 180
agaggtggta caaaatgcat ttgaaactca tgcaataatt atcctcagta gtatttctta 240
cagtgagaca acaggcaatg tcagtgaggg cgatcgtagg gcataagcct aagccatacc 300
atgcagcctt tgtgccagca accaaatccc atgtttccta ctgtgttaag tttaaaaatg 360
catttattat agaattgtct acatttctga ggatgtcatg gagaatgctt aattttcttt 420
ctctgaactt caaaatatta aatattttct tattttttg attaaagtat aaattaagac 480
accctattga cttccgggta aggggagtca attgattacc cagcagcaca gtatttgctt 540
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tttataattc cctttttaaa tacttgttct taattgactg gttttccttt tctgtcattt 600
ttcagagttt agattgtgag tccatgtttt gtctgttgtg cctataaagg aaatttgaaa 660
tctgtatcat tctactataa agacacatgc acacgtatgt ttattgcagc actgtttaca 720
atagcaaaga cttggaacca accaaaatac ccacaaatga tagaccggat aaagaaaacg 780
tgacacatat acaccatgga atactatgca gccatagaaa aggatgagtt catattcttc 840
acagggacat ggatgaagct ggaaaccatc atcctcagca aactaacaca ggaacagaaa 900
accaaacacc gcatgttctc actcataagt gggaattgaa caatgagaat acatggacac 960
agggaggggga acaccacacc ctggggcctg ttgggggggat ggggctagg ggagggatag 1020
cattaggaga aatacctgat gtagatgatg ggttgatggg tg 1062


<210> 87
<211> 287
<212> DNA
<213> Homo sapiens

<400> 87
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ctcaaaactt cattctaatt gtgccctgag tttgttaaaa taccatactg tatttttgtg 120
taacatgtaa ataggcatta attttttgaga aatagaaatg tttatcctta atgtattttt 180
aatttgctaa cattgatttt ttattttctt tcctgaaata gcttatttcc taaaatgaaa 240
gaatttattc tcagatgaat aatttttata tcagctattc ttatcag 287


<210> 88
<211> 280
<212> DNA
<213> Homo sapiens

<400> 88
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aactggacaa ggagaaaaac atagggaaaa aaccaacaga atttgttggc atgttctaca 120
cacagaccat ggcttttcag aagccaagct gaataaaaac agttttaaaa gaggcaacca 180
tttgtagagg agtccttgaa ggattcttca ttgtttttctt ggacaaaaag agaccagtgg 240
atccaagtgc ttcaaatact tctctcttat tttcttaact 280


<210> 89
<211> 141
<212> DNA
<213> Homo sapiens

<400> 89
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agataagcgt gcgtcaacaa attcaggctc ttctgtacaa gaattttctt aaaaaatgga 120
gaataaaaag agagtttatt g 141


<210> 90
<211> 205
<212> DNA
<213> Homo sapiens

<400> 90
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gctacccgtt ttcctgaaca acctcctaaa gtcctgggaa gcgtggatca gtttaatgac 120
tctggcctgg tagtggcata tacaccagtc agtaacataa cacaaaggat aatgaataag 180
atggccttgg cttcctttat gaaag 205


<210> 91
<211> 165
<212> DNA
<213> Homo sapiens
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<400> 91
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accatgaaat ggtgggagtt atatttagtg atactttctc atatcgcctg aagtttaatt 120
ggggatatag aatcccagtt ataaaggagc actctgaata cacag 165

<210> 92
<211> 104
<212> DNA
<213> Homo sapiens

<400> 92
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ggtttgtagc ttttcaagct gcaattaatg ctgcaattat agaa 104

<210> 93
<211> 227
<212> DNA
<213> Homo sapiens

<400> 93
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ataccacctt tcatttctaa gggagaaatt atgaatgaat ggtttcattt tacttgctta 120
gtttctttct cttctttat atactttgca tcattaaatg ttgcaaggga aagaggaaaa 180
tttaagaaac tgatgacagt aatgggtctc cgagagtcag cattctg 227

<210> 94
<211> 142
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> 11
<223> n=unknown, may be a or g or c or t

<400> 94
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ggtcataaca tcaatctcaa ttgtatttca tactggcttc atggtgatat tcacactcta 120
tagcttatat ggcctttctt tg 142

<210> 95
<211> 186
<212> DNA
<213> Homo sapiens

<400> 95
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ggatttctct tcactgtatt ttggggatgt ctgggattca ctgtgttata cagacaactt 120
cctttatctt tgggatgggt attaagtctt cttagccctt ttgccttcac tgctggaatg 180
gcccag 186

<210> 96
<211> 148
<212> DNA
<213> Homo sapiens

<400> 96
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tacaaaatga tagccacttt tttcattttg gcatttgata ctcttttcta tttgatattc 120
acattatatt ttgagcgagt tttacctg                                   148


<210> 97
<211> 169
<212> DNA
<213> Homo sapiens

<400> 97
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atcaaaatac tcatcatgaa atctttgaga atgaaataaa tcctgagcat tcctctgatg 120
attcttttga accggtgtct ccagaattcc atggaaaaga agccataag             169


<210> 98
<211> 59
<212> DNA
<213> Homo sapiens

<400> 98
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<210> 99
<211> 111
<212> DNA
<213> Homo sapiens

<400> 99
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gtaaatcaac actgctaaac attcttagtg gattgtctgt ttctacagaa g          111


<210> 100
<211> 176
<212> DNA
<213> Homo sapiens

<400> 100
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agaatattgg attttgtcca cagttcaatt ttcaatttga cttcctcact gtgagagaaa 120
acctcagggt atttgctaaa ataaaaggga ttcagccaaa ggaagtggaa caagag     176


<210> 101
<211> 120
<212> DNA
<213> Homo sapiens

<400> 101
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ttaagtggtg ggcagaagag aaaactaaca ctagggattg ccatcttagg agatcctcag 120


<210> 102
<211> 139
<212> DNA
<213> Homo sapiens

<400> 102
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agcctcctga aggagcataa agtagaccga cttatcctct tcagtaccca attcatggat 120
gaggctgaca tcttggctg                                             139
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<210> 103
<211> 91
<212> DNA
<213> Homo sapiens

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agcgaaagtg gggtattgga tatcatttaa g   91

<210> 104
<211> 140
<212> DNA
<213> Homo sapiens

<400> 104
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tcctgatgcc aagttaacaa cagaaagtga agaaaaactt gtatatagtt tgcctttgga 120
aaaaacgaac aaatttccag   140

<210> 105
<211> 120
<212> DNA
<213> Homo sapiens

<400> 105
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tgacatctct gaatgaagta ttcttgaacc tagaaggaaa atcagcaatt gatgaaccag 120

<210> 106
<211> 199
<212> DNA
<213> Homo sapiens

<400> 106
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aaatggaaca ggttctttgt tctcttcctg aaacaagaaa ggctgtcagt agtgcagctc 120
tctggagacg acaaatctat gcagtggcaa cacttcgctt cttaaagtta aggcgtgaaa 180
ggagagctct tttgtgttt   199

<210> 107
<211> 167
<212> DNA
<213> Homo sapiens

<400> 107
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aatcccgaag acgcctctta ccagcctgtt aatcgttaat aatacag   167

<210> 108
<211> 134
<212> DNA
<213> Homo sapiens

<400> 108
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atgactttag aaacagaaat ggctcagatg atccctccta caatggagcc atcatagtgt 120

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ctggtgacca gaag   134

<210> 109
<211> 138
<212> DNA
<213> Homo sapiens

<400> 109
gattacagat tttctgttgc gtgtaatacc aagaaattga attgttttcc tgttcttatg 60
ggaattgtta gcaatgccct tatgggaatt tttaacttca cggagcttat tcaaacggag 120
agcacttcat tttctcgt   138

<210> 110
<211> 108
<212> DNA
<213> Homo sapiens

<400> 110
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aactgcgttt ctccttttat cggcatgagc agcatcagcg attataaa   108

<210> 111
<211> 171
<212> DNA
<213> Homo sapiens

<400> 111
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